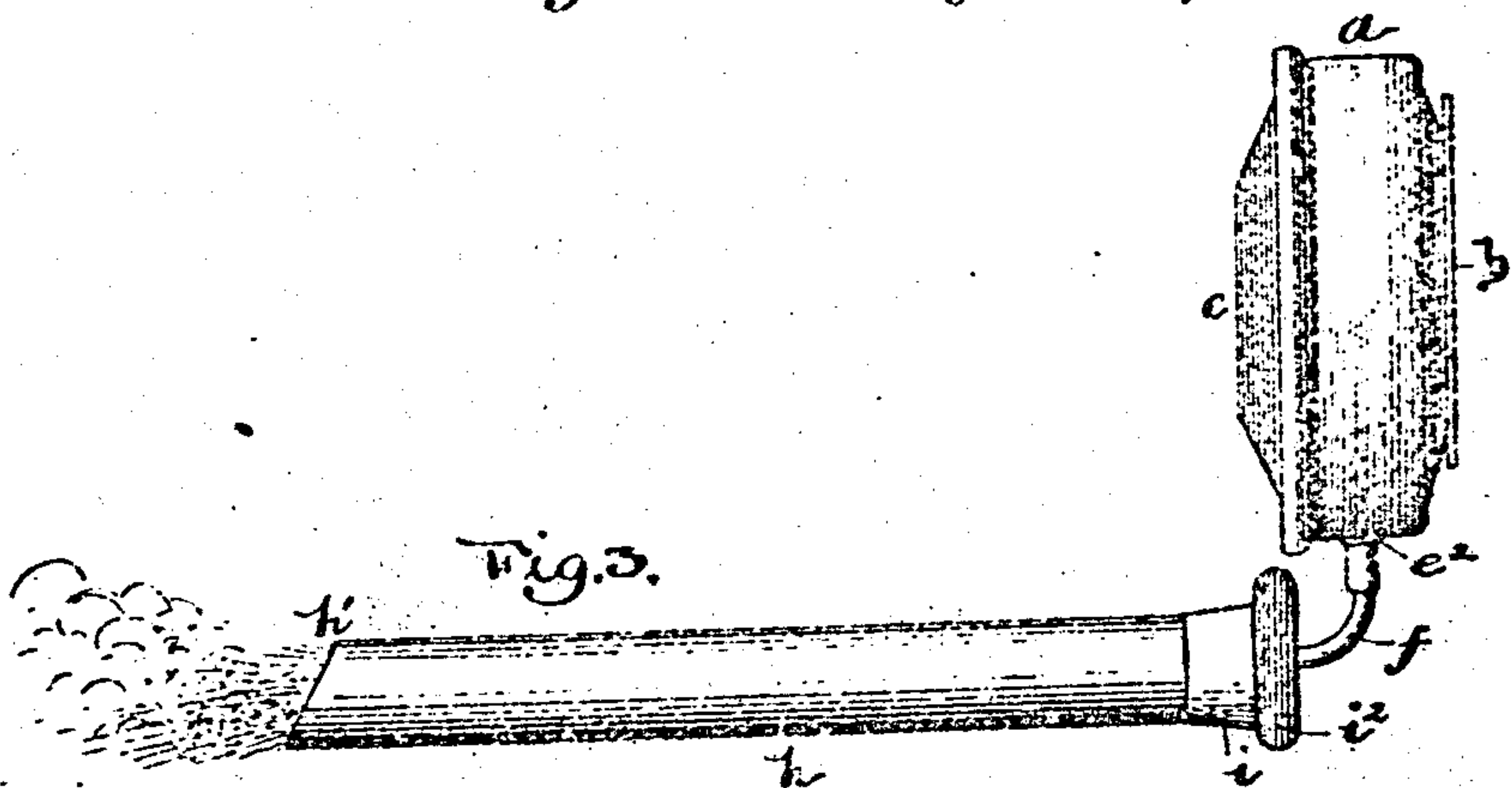
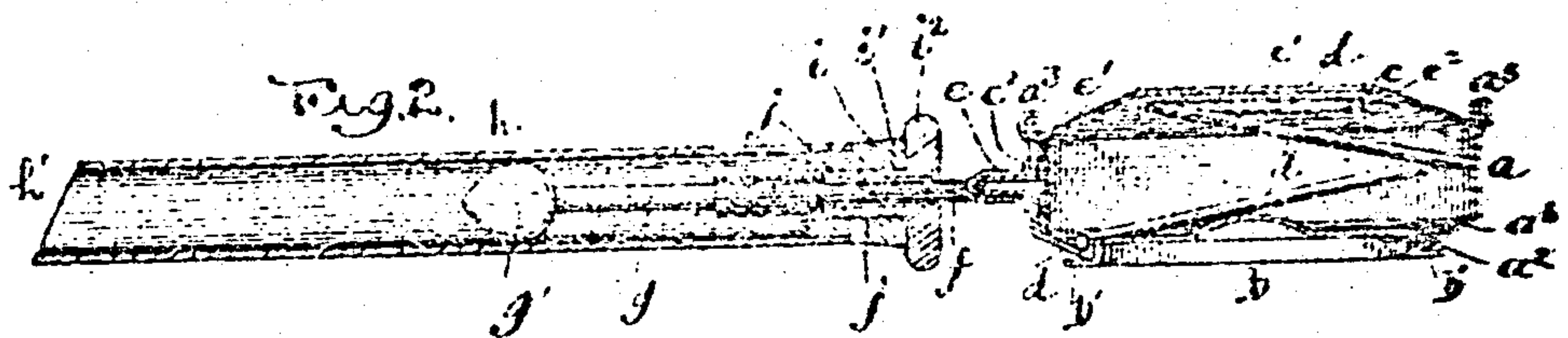
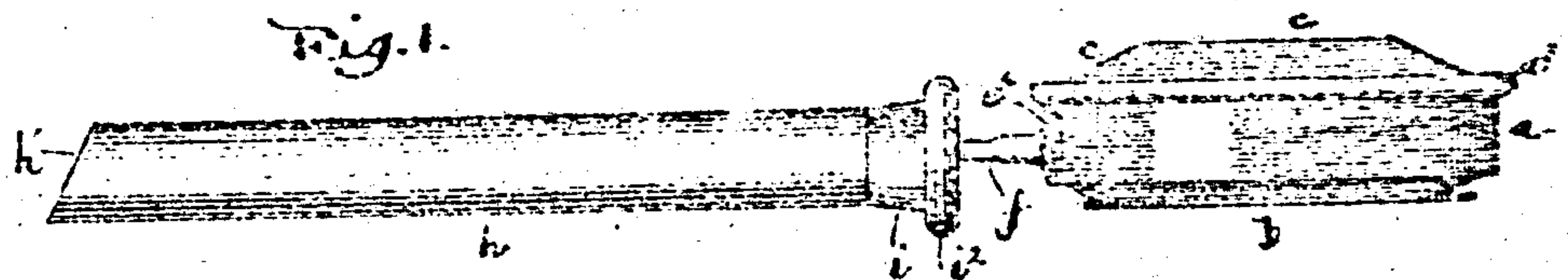


No. 742,634.

PATENTED OCT. 27, 1903.

T. E. HALL.
MEDICAMENT INJECTOR.
APPLICATION FILED NOV. 8, 1902.

NO MODEL.



Witnesses
Samuel W. Banning
Walker Banning.

Inventor
Thomas E. Hall
By Banning & Banning Attys

UNITED STATES PATENT OFFICE.

THOMAS E. HALL, OF CHICAGO, ILLINOIS.

MEDICAMENT-INJECTOR.

SPECIFICATION forming part of Letters Patent No. 742,634, dated October 27, 1903.

Application filed November 8, 1902. Serial No. 130,605. (No model.)

To all whom it may concern:

Be it known that I, THOMAS E. HALL, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Medicament-Injectors, of which the following is a specification.

The object of this invention is to construct an injector for the application of medicament in the form of dry powder to passages of the human body and have the application properly made and under conditions to obtain the most beneficial results and so as to insure the discharge of the powder without being lumpy; and the invention consists in the features of constructions and combinations of parts hereinafter described and claimed.

In the drawings, Figure 1 is a side elevation of the injector of the invention; Fig. 2, a central longitudinal section of the same with some of the parts in full elevation, and Fig. 3 a side elevation showing a position for use.

The injector is constructed with a bellows or blower formed of a circumferential body or wall *a*, with an inwardly-turned rim *a'* on one side, terminating in an inwardly-turned edge or flange *a''*, forming an annular opening into which is entered a cap or cover *b*, having a rim or flange *b'*, which when the cap or cover is in place abuts against the edge of the rim *a'* around the opening.

The opposite side of the body or wall *a* is fully open, and across this opening is stretched a cover *c*, of any suitable material, constituting the movable section of the bellows or blower. The cover *c* is attached, as shown, to the body or wall by entering the edge of the cover into a clasp *a'''*, formed by turning the edge of the body or wall over the edge of the cover. The cover *c* has at its center a disk *c'*, with a turned peripheral edge or rim *c''*, and against this disk within the edge or rim abuts the end of a spring *d*, the other end of which rests on the rim *a'* of the body or wall. This spring serves to hold the cover *c* under tension and permits the cover to be pressed inwardly to eject or force out the powder or other material within the chamber of the bellows or blower, and with the release of the force for inwardly pressing the cover

the spring acts and returns the cover to normal position.

The body or wall, the cap *b* on one side the cover *c* on the other side, inclose a chamber for the reception of the powdered medicament, and the medicament is supplied to the chamber by removing the cover *b* and entering the medicament through the opening, when the required amount of medicament entered the opening is closed by the cover *b*. A nipple *e* leads through the body or wall, the bellows or blower and, as shown, is secured in place by a flange *e'* on its inner end and a collar *e''* around its body adjacent the outer face of the body or wall. The nipple has slipped thereunto one end of a tube *f*, preferably of rubber or other flexible material, but which could be of suitable rigid material. The other end of the tube *f* is slipped or entered onto the end of the stem of a discharge-nozzle having a discharge orifice *g'*, with a fine perforation in its distal end. The discharge-bulb is of a bulbous shape, forming a chamber on the inner side against the wall of the chamber in which the powdered medicament will be driven by the force of the discharge for the impact of the particles against the wall of the chamber to break and destroy any lumps or adhesion of the particles, thereby insuring the discharge of the powdered medicament at the place of application in a condition not to cause irritation from lumps or adhesion of the particles, also preventing the stoppage of the discharge orifice or perforation by lumps or adhesion of particles, thus insuring the operation of the injector in discharging the particles properly and have the application thereof to the patient to be treated an efficient and reliable one.

The discharge-nozzle is surrounded by a tube *h*, preferably of metal or other suitable material, which tube extends beyond the end of the nozzle, and its outer end *h'* is, as shown, cut on an incline, so as to facilitate the insertion of the tube into the vagina or other passage of the body to be treated and to direct the discharge of the medicament to the diseased portion that is to be treated. The interior diameter of the tube *h* is as large as the exterior diameter of the bulb at its largest part, and the interior

the tube forward of the discharge-bulb forms a chamber into which the medicament spreads from the discharge-orifice of the bulb, to be discharged in a sprayed or showered condition onto the place of application.

The tube *h* at its inner end is closed by a cork or stopper *i*, of any suitable material, entered into which is a bushing *j*, through which and a head *k*, against which the cork abuts, the tube *f* passes and, as shown, the hole for the passage of the tube *f* through the cork, bushing, and head is of a greater diameter than the diameter of the tube, leaving a passage *f'* around the tube, so as to prevent the forming of a vacuum within the tube *h*, by which the suction of the bellows or blowers on the outward movement of the cover would draw or suck the discharged medicament back into the tube *h* and destroy its delivery to the part to be treated.

The medicament, preferably in the form of a fine powder, is placed in the chamber of the bellows or blower by removing the cap, and when filled to the extent required the cap is replaced and the injector or instrument is ready for use. In use the tube *h* is entered into the vaginal passage or other passage of the body where the treatment is to be applied, and when the proper point is reached the cover *c* is pressed inwardly, discharging a quantity of the powdered medicament from the chamber of the bellows or blower through the nipple *e*, tube *f*, and stem *g* of the discharge-nozzle into the chamber of the bulb *g'* of the nozzle to pass therefrom through the discharge orifice or perforation into the tube *h* and be directed thereby and discharged at the place of application. If more than one discharge of the medicament is required at one operation, the bellows or blower can be turned up edgewise, as shown in Fig. 3, allowing the powder to fall down after each movement of the covers for the next advance of the cover to discharge and apply a further quantity of the medicament, and for the purpose of obtaining several discharges without removing the tube *g* a flexible tube *f* is preferred; but where only one discharge is wanted the tube *f* can be of some rigid material. After the contents of the chamber of the bellows or blower have been discharged it can be refilled by removing the cap.

It will be seen that with the injector or instrument of the present invention the application of powdered medicament within the passage to be treated at the point of application for the medicament is assured in a reliable manner, that one or more discharges can be obtained without the removal of the distributing or applying tube, that danger

from lumps or adhering particles of the medicament is overcome, that the distributing or applying tube opens the passage for the motion of the medicament, that the powdered medicament is discharged in a shower or sprayed form directly on the diseased part, that suction cannot take place to withdraw the medicament when once discharged, that the operation of the injector or instrument does not require any special skill except in locating the diseased part and properly directing the tube to discharge the medicament, all of which makes the injector or instrument very desirable and applicable for use in treating diseases of the vagina, for which purpose it is specially designed and for internal treatment of other passages.

What I regard as new, and desire to secure by Letters Patent, is—

1. In a medicament-injector, the combination of a distributing-tube, a closure inserted into the rear end of the tube, a flexible tube passing entirely through the closure and projecting inwardly therefrom, a discharge-nozzle inserted into the inwardly-projecting end of the flexible tube, and a bellows or blower having a chamber for containing a medicament preparation connected with the flexible tube exterior of the closure, substantially as described.

2. In a medicament-injector, the combination of a discharge-tube, a closing-plug inserted into one end of the discharge-tube, a flexible tube passing through the plug, projecting inwardly therefrom, a discharge-nozzle inserted into the inwardly-projecting end of the flexible tube and projecting at its free end with an enlarged conical discharge-bulb, and a bellows or blower connected with the flexible tube exterior of the discharge-tube and closure, substantially as described.

3. In a medicament-injector, the combination of a discharge-tube having its rear end cut on an incline, a closure inserted into the opposite end of the discharge-tube, a flexible tube passing entirely through the closure and projecting inwardly therefrom, a discharge-nozzle inserted into the projecting end of the flexible tube consisting of a tubular stem provided on its end with a conical discharge-bulb, and a bellows or blower, adapted to contain a medicament preparation, exterior of the discharge-tube and connected with the flexible tube substantially as described.

THOMAS E. H.

Witnesses:

THOMAS A. BANNING,
OSCAR W. BOND.